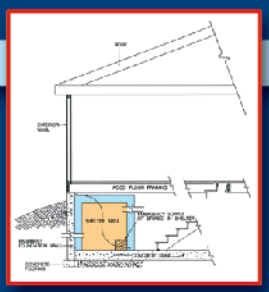
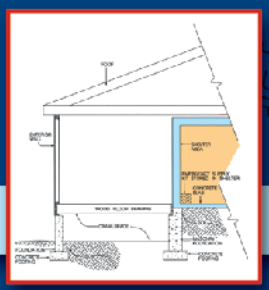
Building Your Safe Room

Tornado and Hurricane Protection



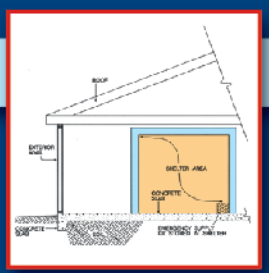
Typical basement foundation with shelter.

Your builder/contractor can use the design drawings in FEMA 320, ***Taking Shelter From the Storm: Building a Safe Room Inside Your House***, to build a shelter for any of the wind zones. The design drawings provided include the details for building five types of shelters: concrete, concrete masonry, wood-frame, lean-to, and in-ground. Each of these alternatives is expected to perform equally well in resisting material fatigue and connection failures caused by extreme winds.



Typical crawlspace foundation with shelter.

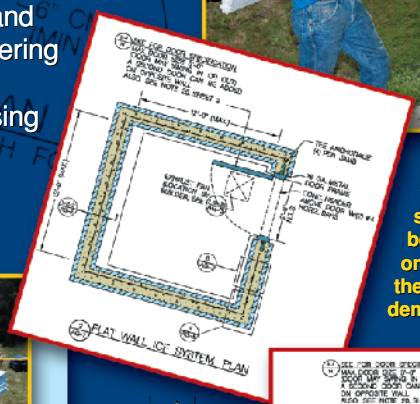
The materials and connections were chosen for their "ultimate strength," which means that the materials are expected to resist the loads imposed on them until they or the connections between them fail. The forces of extreme winds may cause cracks or other signs of stress in the materials or connections, and they may cause materials or connections to yield. However, the intent of the designs is not to produce a shelter that will always remain completely undamaged, but rather a shelter that will enable its occupants to survive an extreme windstorm with little or no injury. The shelter itself may need to be extensively repaired or completely replaced after an extreme wind event.



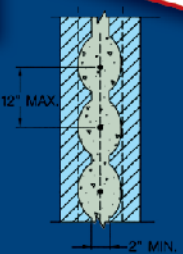
Typical slab-on-grade foundation with shelter.

The shelter size and materials specified in the drawings are based on principles and practices used by structural engineering professionals and the results of extensive testing for effects of missile impact. Before increasing the shelter size or using material types, sizes, or spacings other than those specified in the drawings, review the changes with a licensed professional structural engineer.

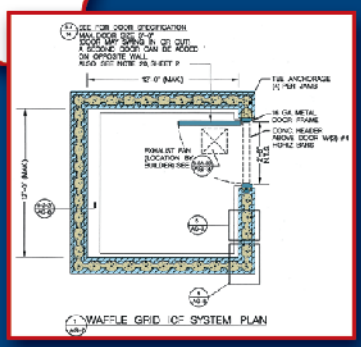
The foam panels of the ICF safe room are so light that they can be easily assembled by one or two people, as the worker above demonstrates.



Workers assemble the roof panels which will have rebar and concrete covering it.



5 AG-7 WAFFLE GRID ICF



Designs using other materials can be found in FEMA 320